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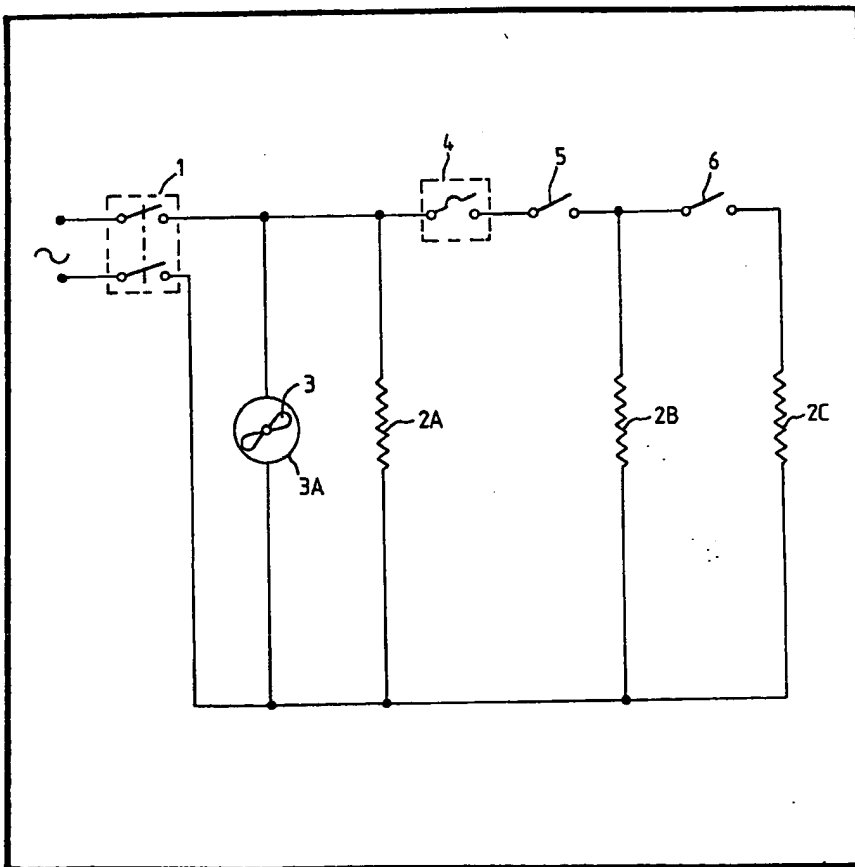
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## (54) Electric fan heaters

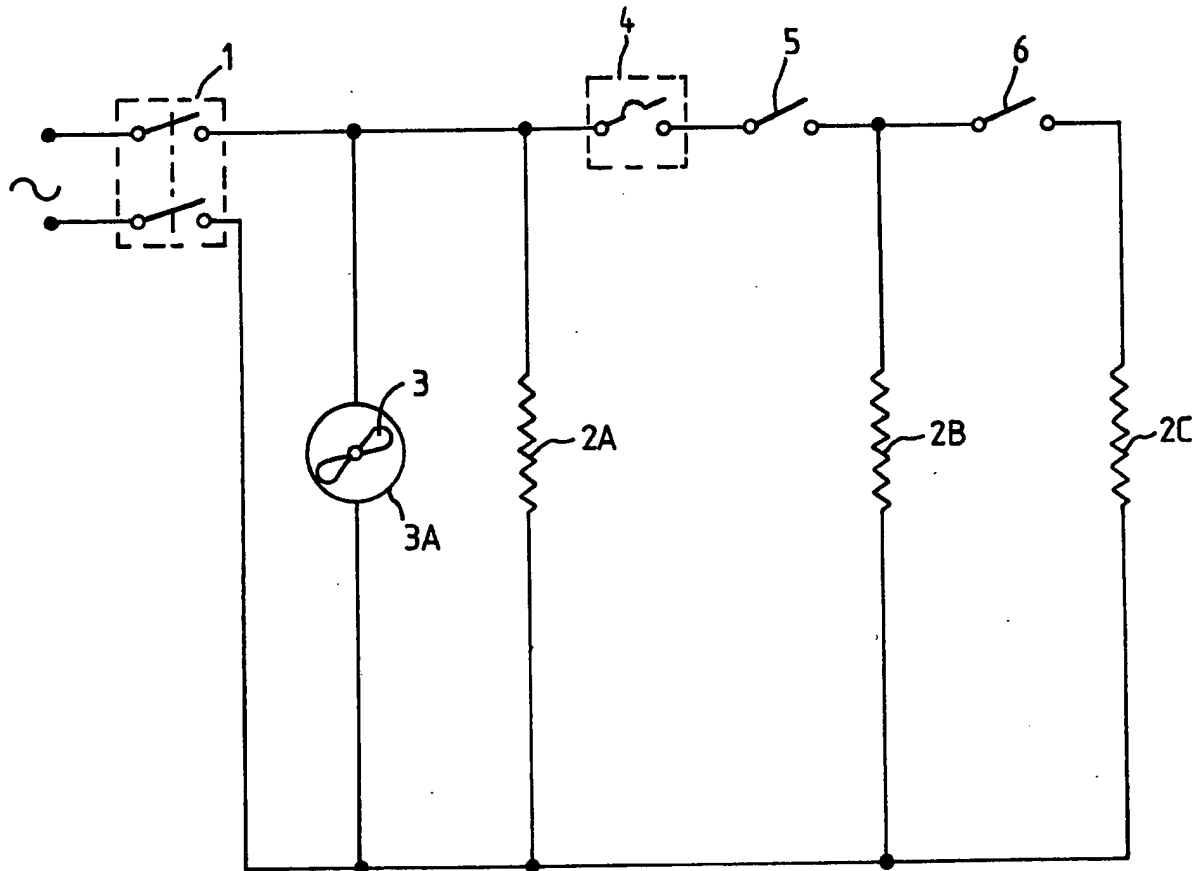
(57) An electric fan heater has at least two heating elements (2A, 2B, 2C) in parallel with each other and with the blower motor (3A), and a thermostat (4) responsive to the temperature of the incoming air and connected so as to control the supply of current to at least one of the heating elements (2B, 2C), with at least one other of the elements (2A) connected so as to be energisable independently of the thermostat. By keeping at least one

heating element energised the drop in temperature at the heat outlet as the thermostat cuts out is considerably less pronounced than is experienced with conventional fan heaters in which all the heating elements are controlled by the thermostat.

The blower motor (3A) may be energised independently of the at least one other element (2A). Two further switches (5, 6) are provided so that the motor may be operated with element 2A only, with elements 2A and 2B or with all three elements.



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## SPECIFICATION

### Electric fan heaters

This invention relates to electric fan heaters, that is to say heaters of the kind incorporating an electrically-driven blower arranged, in use of the heater to induce a flow of air over one or more electric heating elements.

In such heaters as constructed hitherto temperature control is commonly exercised by a thermostat responsive to the temperature of the air admitted to the heater, and operable to switch off the supply of current either to the blower motor and the heating element(s), or to the heating element(s) only, when the temperature of the incoming air reaches a desired value determined by the setting of the thermostat. In both cases this causes a sudden, significant drop in the temperature at the heater outlet, which may be a source of annoyance or inconvenience to the user.

According to the invention an electric fan heater has at least two heating elements connected in parallel with each other and with the blower motor, and includes a thermostat responsive to the temperature of the incoming air and connected so as to control the supply of current to at least one of the heating elements, with at least one other of the heating elements connected so as to be energisable independently of said thermostat.

It will be seen that when the thermostat operates to switch off the supply of current to one or more of the heating elements, at least one other element remains energised to supply a degree of heat to air discharged from the heater, and as the heater will continue to supply some heated air the drop in temperature at the heater outlet will be considerably less pronounced than is experienced with conventional fan heaters.

A fan heater in accordance with the invention may have a single heating element connected directly in parallel with the blower motor so as to be energised continuously while the blower is operative, and one or two further elements connected in parallel with that element and in series with the thermostat so as to be controllable thereby.

Where the heater includes two said further elements, switch means may be provided for selectively cutting out one or both of said further elements to provide a reduced heat output from the heater where this is required.

In cases where it is desired to be able to operate the heater as a blower only, the element that is connected directly in parallel with the blower motor may also have a switch in series with it to enable the element to be switched off while the blower remains operative.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawing which represents a circuit arrangement of a particular form of fan heater in accordance with the invention.

The circuit comprises a pair of input terminals

65 T arranged to be connected to an electrical supply, for example by means of a conventional plug and socket coupling (not shown). A switch 1 controls the supply of current to three heating elements 2A, 2B, 2C and to the motor 3A of a blower 3, all of which are connected to the switch 1 in parallel with each other.

The heating element 2A is connected directly across the motor 3A so that when the switch 1 is closed both the blower 3 and the element 2A are energised.

A thermostat 4, which may be manually adjustable, controls the supply of current to the other two heating elements 2B, 2C, the thermostat being located adjacent the air inlet to the fan in the usual manner.

It will therefore be seen that, when the incoming air attains the temperature at which the thermostat 4 is set, only the heating elements 2B, 2C will be switched off, current continuing to be supplied to the element 2A, as well as to the blower motor, as long as the main switch 1 remains closed.

Accordingly some reduced heating of the air will continue to take place when the thermostat is operated and a sudden substantial drop in temperature at the heater outlet will be avoided.

Two further switches 5, 6 are conveniently provided, as shown, the controls for the switches 1, 5, 6 being so arranged that the elements 2A, 2B, 2C are switched into use sequentially, so that the fan can be operated simply with the element 2A energised, or with the elements 2A, 2B energised or all three elements energised, the elements 2B, or 2B and 2C, as in the case may be, being thermostatically controlled as above described.

In some cases an additional switch may be located at the position 7 if operation of the blower alone, without any heating of the air, is required.

It will be appreciated that more than three heating elements can in some cases be provided, provided that at least one is energisable independently of the thermostat.

In any of the embodiments above described the thermostat may be replaced by an adjustable energy regulator arranged to switch one or more elements on and off for selected and adjustable time periods, thereby controlling the mean heat output from the heater, with at least one element remaining energised when the other elements are switched off by the energy regulator so as to avoid sudden substantial temperature drops at the heater outlet in a like manner to the heaters previously described.

### 120 Claims

1. An electric fan heater having at least two heating elements connected in parallel with each other and with the blower motor, and including a thermostat responsive to the temperature of the incoming air and connected so as to control the supply of current to at least one of the heating elements, with at least one other of the heating

elements connected so as to be energisable independently of said thermostat.

2. An electric fan heater according to Claim 1  
5 having a single heating element connected directly in parallel with the blower motor so as to be energised continuously while the blower is operative, and one or two further elements connected in parallel with that element and in series with the thermostat so as to be controllable  
10 thereby.

3. An electric fan heater according to Claim 2 having two said further heating elements, including switch means for selectively cutting out one or both of said further elements to provide a  
15 reduced heat output from the heater.

4. An electric fan heater according to Claim 2 or 3 wherein the heating element that is

connected directly in parallel with the blower motor has a switch in series with it to enable the element to be switched off while the blower remains operative.

- 20 5. An electric fan heater according to any preceding claim wherein the thermostat is manually adjustable.

- 25 6. An electric fan heater according to any preceding Claim wherein the thermostat is replaced by an adjustable energy regulator arranged to switch its associated heating element or heating elements on and off for selected and adjustable time periods.

- 30 7. An electric fan heater having a circuit arrangement substantially as shown in and as hereinbefore described with reference to the accompanying drawing.